Claims

1. A polymer composite film for packaging fresh meat and vegetable produce, the composite film having a thickness and is compounded to have a film surface with anti-fog properties for visual clarity and to have gas permeability rate control, comprising:

a polymer film substrate that has a molecular chain order and into which a surface active agent and a plasticizer active ingredient are incorporated;

the surface active agent incorporated in an amount that provides a film surface over which ambient or latent moisture generally uniformly spreads to form a generally optically transparent, moisture-carrying film surface; and

the plasticizer active ingredient incorporated in an amount and in cooperation with the molecular chain order in the polymer film substrate and the thickness of the polymer composite film to provide the polymer composite film with a predetermined gas permeability rate.

2. The polymer composite film of claim 1, in which the polymer film substrate includes polyvinyl chloride and the composite film is of a monolayer type.

3. The polymer composite film of claim 1, in which the polymer film substrate is prestretched or heated to provide an orientation of the molecular chain that increases its order and thereby contributes to the predetermined gas permeability rate.

4. The polymer composite film of claim 1, in which the amount of surface active agent ranges from between about 0.001 and 5 parts/hundred resin.

5. The polymer composite film of claim 4, in which the surface active agent includes one or more of surfactant, antistat, antiblock, and slip agents.

6. The polymer composite film of claim 1, in which the amount of plasticizer active ingredient ranges from between about 5 and 60 parts/hundred resin.

7. The polymer composite film of claim 6, in which the plasticizer active ingredient is selected from a group including di(2-ethyl-hexyl) adipate and epoxidized soya bean oil.

8. The polymer composite film of claim 7, in which the multilayer polymer composite film structure is formed by lamination or extrusion of the polymer film substrate and the second layer.

9. The polymer composite film of claim 1, further comprising a process aid in an amount sufficient to provide adequate lubrication and heat stabilization for the polymer composite film to withstand its process of manufacture.

10. The polymer composite of claim 1, further comprising a copolymer additive to the polymer film substrate in an amount sufficient to change a modulus property of the polymer composite film without appreciably changing its gas permeability rate.

11. The polymer composite film of claim 10, in which the copolymer additive is selected from a group including PVCPVA or polyester adipate.

12. The polymer composite film of claim 1, further comprising a second layer that is supported by the polymer film substrate to form a multilayer polymer composite film structure with a specified thickness, each of the second layer and the polymer film substrate characterized by different gas permeability properties that provide a specified overall gas permeability rate at the specified thickness.

13. The polymer composite film of claim 12, in which the polymer film substrate and second layer have adjacent surfaces separated by an adhesive.

14. The polymer composite film of claim 13, in which the adhesive is selected from a group including a tie adhesive, barrier adhesive, and air.

15. The polymer composite film of claim 1, further comprising a second layer that is supported by the polymer film substrate, different ones of the polymer film substrate and the second layer constituting a inner polyvinyl chloride layer having a lower melting point and an outer polyvinyl chloride layer having a higher melting point to form a multilayer polymer composite film structure with a differential heat seal capability.

16. The polymer composite film of claim 15, in which the polymer film substrate is the outer layer and the second layer is the inner layer.

17. The polymer composite film of claim 15, in which the differential heat seal of the multilayer polymer composite film structure is formed by lamination or extrusion of the polymer film substrate and the second layer.